US010478099B2

(12) **United States Patent**
Lor et al.

(10) **Patent No.: US 10,478,099 B2**
(45) **Date of Patent: Nov. 19, 2019**

(54) **SYSTEMS AND METHODS FOR DETERMINING AXIAL ORIENTATION AND LOCATION OF A USER'S WRIST**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/705,644**

(22) Filed: **Sep. 15, 2017**

(65) **Prior Publication Data**

US 2018/0078183 A1 Mar. 22, 2018

Related U.S. Application Data

(60) Provisional application No. 62/398,338, filed on Sep. 22, 2016.

(51) **Int. Cl.**
G01L 1/16 (2006.01)
A61B 5/11 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***A61B 5/1122*** (2013.01); ***A61B 5/681*** (2013.01); ***A63B 24/0006*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC ... A61B 5/02416; A61B 5/681; A61B 5/0492; A61B 5/067; A61B 5/1112;
(Continued)

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(57) **ABSTRACT**

This relates to systems and methods for determining the axial orientation and location of the user's wrist using one or more sensors located on the strap, the device underbody, or both. For example, the strap can include a plurality of elastic sections and a plurality of rigid sections. Each elastic section can include one or more flex sensors. In some examples, on or more electromyography (EMG) sensors can be included to measure the user's electrical signals, and the user's muscle activity can be determined. In some examples, a plurality of strain gauges can be included to generate one or more signals indicative of any changes in shape, size, and/or physical properties of the user's wrist. In some examples, the device can include a plurality of capacitance sensors for increased granularity and/or sensitivity in measuring the amount of tension exerted by the user's wrist.

18 Claims, 8 Drawing Sheets